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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,000	11/27/2002	Jung-Chih Hu	MERCK 2395	5769
23599	7590	03/10/2004	EXAMINER WONG, EDNA	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			ART UNIT 1753	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/070,000	Applicant(s) HU ET AL.	
	Examiner Edna Wong	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 4 is/are allowed.
- 6) ☒ Claim(s) 2,3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This is in response to the Amendment dated February 12, 2004. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Drawings

The formal drawings were received on February 12, 2004. These drawings are approved by the Examiner.

Specification

The disclosure has been objected to because of minor informalities.

The objection to the disclosure has been withdrawn in view of Applicants' amendment.

Claim Objections

Claims **1-3** have been objected to because of minor informalities.

The objection of claims 1-3 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims **1-3** have been rejected under 35 U.S.C. 112, second paragraph, as being

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indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 1-3 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Response to Amendment

Claim Objections

Claims **2 and 3** are objected to because of the following informalities:

Claim 2

line 1, it is suggested that the word -- electroplating -- be inserted after the word "A".

Claim 3

line 1, it is suggested that the word -- electroplating -- be inserted after the word "A".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **2-3, 5-6 and 8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claim 3

line 2, it appears that the "HCl" is the same as that recited claim 1, line 2. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "from".

Claim 5

line 2, it is unclear how "(NH₂OH)₂·H₂SO₄" is an additive when it is already an additive in the solution (from claim 1, line 3, "hydroxyl amine sulfate").

Claim 6

line 1, the words "made by" should be deleted because the body of the claim does not disclose process steps.

Claim 8

line 3, it is unclear what "optionally an additive" is further limiting. Is it the electroplating solution? If so, then it is suggested that the words -- wherein the electroplating solution further comprises -- be inserted after the word "and".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

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form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by **King et al.**

(US Patent No. 5,174,886).

King teaches an electroplating solution comprising:

(a) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$;

(b) H_2SO_4 ;

(c) Cl^- ions; and

(d) polyethylene glycol with a molecular weight greater than 200 (col. 3,

lines 35-54; and cols. 5-6, Example 3).

The electroplating solution comprises optionally an additive (= a brightener or leveler) [cols. 5-6, Example 3].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over

King et al. (US Patent No. 5,174,886) as applied to claim 7 above.

King et al. is as applied above and incorporated herein.

King does not teach wherein the concentration of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is 60-150 g/l, H_2SO_4 is 80-150 g/l, Cl^- ions are 50-150 ppm; and polyethylene glycol is less than 100 ppm.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution of King with wherein the concentration of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is 60-150 g/l, H_2SO_4 is 80-150 g/l, Cl^- ions are 50-150 ppm; and polyethylene glycol is less than 100 ppm because the concentration of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, H_2SO_4 , Cl^- ions and polyethylene glycol are result-effective variables and one skilled in the art has the skill to calculate the concentrations that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

Furthermore, the claimed concentrations do not avoid obviousness in the absence of new or unexpected results.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims **1-5** define over the prior art of record because the prior art does not teach

or suggest an electroplating solution for copper comprising $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, H_2SO_4 , HCl, polyethylene glycol with a molecular weight greater than 200, hydroxyl amine sulfate and hydroxyl amine chloride.

Claim 6 defines over the prior art of record because the prior art does not teach or suggest an electroplating solution comprising $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, H_2SO_4 , HCl and optionally an additive; and polyethylene glycol with a molecular weight greater than 200, and either hydroxyl amine sulfate or hydroxyl amine chloride.

Claim 9 defines over the prior art of record because the prior art does not teach or suggest an electroplating solution according to claim 7, further comprising hydroxyl amine sulfate or hydroxyl amine chloride.

The prior art does not contain any language that teaches or suggests the above. *Mizumoto et al.* teaches determining formaldehyde in an electroless copper plating solution by potentiometric titration with a standard $\text{NH}_2\text{OH} \cdot \text{HCl}$ solution (abstract). Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Claims 2-3 and 5-6 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

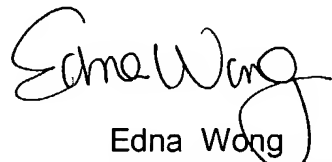
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Edna Wong". The signature is fluid and cursive, with the first name "Edna" and last name "Wong" clearly distinguishable.

Edna Wong
Primary Examiner
Art Unit 1753

EW
March 5, 2004